

WHAT IS CLAIMED IS:

1. An apparatus for ligating a hollow anatomical structure, comprising:
 - a catheter having a sheath and a working end, wherein a tip, a port and an opening are located at the working end of the catheter, and the port is in fluid communication with a lumen;
 - a balloon located at the working end of the catheter, wherein the port is located between the balloon and the tip;
 - an inner member disposed within the sheath such that the inner member and the sheath are capable of being moved relative to one another;
 - a plurality of leads, each lead having a distal end, the plurality of leads being coupled with the inner member such that the distal ends of the plurality of leads become extended out of the opening at the working end of the catheter when the sheath is moved relative to the inner member, each lead being formed to move the distal end away from a longitudinal axis defined by the sheath when the plurality of leads are extended out the opening;
 - wherein the distal end of each lead is capable of delivering energy to the anatomical structure.
2. The apparatus of claim 1, wherein the anatomical structure is a vein, and the formed leads have sufficient force to move into apposition with the vein wall, and the formed leads do not have sufficient strength to prevent the reduction of the diameter of the vein when energy is applied by the distal end of the leads.
3. The apparatus of claim 1, further comprising a secondary lead having a distal secondary end, the secondary lead being coupled with the inner member such that the distal secondary end of secondary lead is extended out of the opening at the working end of the catheter when the inner member is moved relative to the sheath, wherein the distal ends of the leads are located between the distal secondary end of the secondary lead and the inner member.

4. The apparatus of claim 3, wherein the leads are electrically connected to a power source such that the polarity of each lead can be switched.

5. The apparatus of claim 3, wherein the plurality of leads and the secondary lead are electrically connected to a power source such that the polarity of the plurality of leads can be changed independently of the polarity of the secondary lead.

6. The apparatus of claim 3, wherein the plurality of leads and the secondary lead are electrically connected to a power source, wherein the polarity of the plurality of leads can be switched to have either the same polarity or to have opposing polarities for adjacent distal ends of the leads, and the polarity of the secondary lead can be switched between having a polarity and being neutral.

7. The apparatus of claim 1, wherein the balloon includes openings exposed to the fluid in the anatomical structure, and the openings allow fluid from the hollow anatomical structure to flow into and expand the balloon.

8. An apparatus for ligating a hollow anatomical structure, comprising:

a catheter having a sheath and a working end, wherein a tip and a port are located at the working end of the catheter, and the port is in fluid communication with a lumen;

a balloon located at the working end of the catheter, wherein the port is located between the balloon and the tip;

a plurality of bowable arms, each arm having a section, wherein the arms being capable of moving the sections away from the catheter and toward the anatomical structure;

a plurality of electrodes, wherein at least one electrode is located on the section of at least one arm, and

wherein the electrode is capable of delivering energy to the anatomical structure.

9. The apparatus of claim 8, wherein the balloon includes openings exposed to the fluid in the anatomical structure, and the openings allow fluid in the anatomical structure to flow into and expand the balloon.

10. The apparatus of claim 8, wherein the anatomical structure is a vein, and the formed leads have sufficient force to move into apposition with the vein wall, and the formed leads do not have sufficient strength to prevent the reduction of the diameter of the vein when energy is applied by the distal end of the leads.

11. The apparatus of claim 8, further comprising at least one aperture formed in the working end of the catheter to allow the delivery of fluid therethrough.

12. The apparatus of claim 11, wherein the fluid has a high impedance.

13. The apparatus of claim 11, wherein the fluid includes heparin and water.

14. An apparatus for ligating a hollow anatomical structure, comprising:
a catheter having a sheath, a working end, and an opening are located at the working end of the catheter;

an inner member disposed within the sheath such that the inner member and the sheath are capable of being moved relative to one another;

a plurality of leads, each lead having a distal end, the plurality of leads being coupled with the inner member such that the distal ends of the plurality of leads become extended out of the opening at the working end of the catheter when the inner member is moved relative to the sheath, each lead being formed to move the distal end away from a longitudinal axis defined by the sheath when the plurality of leads are

extended out the opening, the distal end of each lead is capable of delivering energy to the anatomical structure;

a flexible, impermeable cover spanning the area between the leads along the circumference of the catheter when the leads are extended out the opening, such that the cover blocks fluid flow within the hollow anatomical structure.

15. The apparatus of claim 14, further comprising at least one aperture formed in the working end of the catheter to allow the delivery of fluid therethrough.

16. The apparatus of claim 15, wherein the fluid has a high impedance.

17. The apparatus of claim 15, wherein the fluid includes heparin and water.

18. The apparatus of claim 14, wherein the anatomical structure is a vein, and the formed leads have sufficient force to move into apposition with the vein wall, and the formed leads do not have sufficient strength to prevent the reduction of the diameter of the vein when energy is applied by the distal end of the leads.

19. A method of applying energy from a power source to a hollow anatomical structure from within the structure, the method comprising the steps of:

introducing into the hollow anatomical structure a catheter having a working end, and a plurality of leads disposed at the working end, each lead having a distal end, each lead being connected to the power source;

blocking the hollow anatomical structure by expanding the circumference of the catheter adjacent the distal ends of the leads;

expanding the leads outwardly from the working end of the catheter, wherein the distal ends of the leads move away from each other and into contact with the anatomical structure;

applying energy to the anatomical structure from the distal end of the leads until the anatomical structure collapses.

20. The method of claim 19, wherein the step of blocking the hollow anatomical structure further includes the step of inflating a balloon on the catheter.

21. The method of claim 19, further comprising the step of delivering fluid to the hollow anatomical structure to displace other fluids present around the working end of the catheter in the hollow anatomical structure.

22. The method of claim 21, further comprising the step of delivering a fluid having a high impedance value to the hollow anatomical structure, the high impedance fluid displacing other fluids present around the working end of the catheter in the hollow anatomical structure.

23. The method of claim 21, further comprising the step of delivering heparin and a fluid having a high impedance value to the hollow anatomical structure, the heparin and the high impedance fluid displacing other fluids present around the working end of the catheter in the hollow anatomical structure.

24. The method of claim 21, further comprising the step of delivering a heparin and saline to the hollow anatomical structure, wherein the heparin and saline displaces other fluids present around the working end of the catheter in the hollow anatomical structure.

25. The apparatus of claim 19, wherein the hollow anatomical structure is a vein, and the formed leads in the step of expanding have sufficient force to move into apposition with the vein wall, and the formed leads do not have sufficient strength to prevent the reduction of the diameter of the vein when energy is applied by the distal end of the leads.